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Welcome to Fresenius Kabi’s Quarterly Abstract Bulletin for enteral nutrition. We have reviewed the following journals over the past three months, and selected any nutrition support related articles:

- Age and Ageing
- American Journal of Clinical Nutrition
- Archives of diseases in Childhood
- BMJ
- British Journal of Community Nursing
- British Journal of Nursing
- Clinical Nutrition
- Complete Nutrition
- Critical Care Medicine
- Current Opinion in Clinical Nutrition and Metabolic Care
- European Journal of Clinical Nutrition
- Gastrointestinal Nursing
- GUT
- Intensive Care Medicine
- Intensive and Critical Care Nursing
- Journal of Community Nursing
- Journal of Human Nutrition and Dietetics
- Journal of Parenteral and Enteral Nutrition
- Journal of Woundcare
- Lancet
- Nutrition
- Nutrition in Clinical Practice
- Nursing and Residential Care
- Nursing Older People
- Nurse Prescribing
- Nursing Standard
- Nursing Times
- Paediatric Nursing

We do recommend that the original article is used for the full details and results.

Please note that due to copyright law our ability to copy and distribute clinical papers is restricted.
The German Hospital Malnutrition Study


Abstract
Background & aims: Malnutrition is frequently observed in chronic and severe diseases and associated with impaired outcome. In Germany general data on prevalence and impact of hospital malnutrition are missing. Methods: Nutritional state was assessed by subjective global assessment (SGA) and by anthropometric measurements in 1886 consecutively admitted patients in 13 hospitals (n=1073, university hospitals; n=813, community or teaching hospitals). Risk factors for malnutrition and the impact of nutritional status on length of hospital stay were analyzed. Results: Malnutrition was diagnosed in 27.4% of patients according to SGA. A low arm muscle area and arm fat area were observed in 11.3% and 17.1%, respectively. Forty-three % of patients 70 years old were malnourished compared to only 7.8% of patients <30 years. The highest prevalence of malnutrition was observed in geriatric (56.2%), oncology (37.6%), and gastroenterology (32.6%) departments. Multivariate analysis revealed three independent risk factors: higher age, polypharmacy, and malignant disease (all P<0.01). Malnutrition was associated with a 43% increase of hospital stay (P<0.001). Conclusions: In German hospitals every fourth patient is malnourished. Malnutrition is associated with increased length of hospital stay. Higher age, malignant disease and major comorbidity were found to be the main contributors to malnutrition. Adequate nutritional support should be initiated in order to optimize the clinical outcome of these patients.

The Prognostic Value of Severe Malnutrition in the Development of Nonthyroidal Illness in Head and Neck Cancer Patients

M P C Siroen, M A E van Bokhorst-de van der Schueren, M C Richir, H P Sauerwein, C R Leemans, J J Quak and P A M van Leeuwen

Abstract
Background: Thyroid hormone metabolism is modulated by starvation and overfeeding but also by dietary composition. Unfortunately, little is known about the effect of malnutrition on disease-induced nonthyroidal illness (NTI). In this study, we investigated whether the degree of NTI after surgery differed between severely malnourished and well-fed patients with head and neck cancer. Methods: Plasma levels of the thyroid hormones 3',5'-triiodothyronine (T3), reverse T3 (rT3), free T4 (FT4), and thyrotropin (TSH) were measured on the first day before the operation and on the first, fourth, and seventh day after the operation in 16 malnourished patients who were admitted for intentional curative surgery of T1–T4 carcinomas of the head and neck. Six well-fed head and neck cancer patients eligible for surgical treatment served as a control group. Results: In the malnourished group, rT3 showed a significant increase, whereas T3 and FT4 decreased significantly due to the operation. TSH showed no significant change. During the postoperative course, it took 7 days until rT3 and 4 days until T3 and FT4 were restored to their preoperative value. In contrast, well-fed patients did not develop NTI. Conclusions: This study shows that peri- and postoperative rT3, T3, and FT4 levels change significantly in malnourished patients compared with well-fed patients. Therefore, it can be concluded that nutrition status of patients undergoing major head and neck surgery should be optimized in order to prevent the development of NTI.
The Impact of Percutaneous Endoscopic Gastrostomy Feeding Upon Daily Life in Adults

A Brotherton, J Abbott, and P Aggett

Abstract

Background: The provision of home enteral tube feeding in adults has increased in the UK. This study explored how percutaneous endoscopic gastrostomy (PEG) feeding impacts on daily lives of adult patients, from the patients' and carers' perspectives. Methods: A semi-structured interview approach was developed to obtain participants' views of the impact of living with a PEG. A cross-sectional qualitative purposive sampling design was employed. Thirty-four semi-structured interviews were conducted (15 adult patients and 19 carers) and data were analysed descriptively and thematically. Results: Difficulties arising from PEG feeding included vomiting, diarrhoea, infection of the PEG site and leakage. The key issues that emerged included relief of pressure to consume an oral diet, disturbed sleep, restricted ability to go out, restricted choice of clothing, difficulties finding a place to feed, missing being able to eat and drink, social occasions, negative attitudes of others towards feeding and the burden placed on family members. Conclusions: The key themes that emerged from participants were diverse and highlight a need for increased social support for both patients and their carers, planned on an individual basis.

Dissemination of the Canadian Clinical Practice Guidelines for Nutrition Support: Results of a Cluster Randomized Controlled Trial


Abstract

Objective: To compare the effectiveness of active to passive dissemination of the Canadian clinical practice guidelines (CPGs) for nutrition support for the mechanically ventilated critically ill adult patient. Design: A cluster-randomized trial with a cross-sectional outcome assessment at baseline and 12 months later. Setting: Intensive care units in Canada. Patients: Consecutive samples of mechanically ventilated patients at each time period. Interventions: In the active group, we provided multifaceted educational interventions including Web-based tools to dietitians. In the passive group, we mailed the CPGs to dietitians. Measurements and Main Results: The primary end point of this study was nutritional adequacy of enteral nutrition; secondary end points measured were compliance with the CPGs, glycemic control, duration of stay in intensive care unit and hospital, and 28-day mortality. Fifty-eight sites were randomized. At baseline and follow-up, 623 and 612 patients were evaluated. Both groups were well matched in site and patient characteristics. Changes in enteral nutrition adequacy between the active and passive arms were similar (8.0% vs. 6.2 %, p = .54). Median time spent in the target glucose range increased 10.1% in the active compared with 1.8% in the passive group (p = .001). In the subgroup of medical patients, enteral nutrition adequacy improved more in the active arm compared with the passive group (by 8.1%, p = .04), whereas no such differences were observed in surgical patients. When groups were combined, during the year of dissemination activities, there was an increase in enteral nutrition adequacy (from 43% to 50%, p < .001), an increase in the use of feeding protocols (from 64% to 76%, p = .03), and a decrease in patients on parenteral nutrition (from 26% to 21%, p = .04). There were no differences in clinical outcomes between groups or across time periods. Conclusions: Although active dissemination of the CPGs did improve glycemic control, it did not change other nutrition practices or patient outcomes except in a subgroup of medical patients. Overall, dissemination of the CPGs improved other important nutrition support practices but was not associated with improvements in clinical outcomes.
Comparison of Tolerance and Change of Intragastric pH Between Early Nasogastric and Nasojejunal Feeding Following Resection of Colorectal Cancer

T-C Hsu, C-F Su, P-C Huang, S-C Lu and S-L Tsai

Abstract

Background: Early feeding after injury has been suggested to decrease morbidity and mortality in many studies. Intrajejunal feeding has been preferred over intragastric feeding due to earlier return of peristalsis following laparotomy. Few reports, however, have focused on the tolerance and change in pH inside the stomach after intragastric and intrajejunal feeding. The aim of the present study was the assessment of (1) the postoperative tolerance of intragastric and intrajejunal feeding, and (2) the effect of intragastric and intrajejunal feeding on intragastric pH value. Materials and methods: From April 1998 to October 2002, 140 patients underwent colon resection for colorectal cancer entered the study. The patients were divided into seven groups of 20 patients each. Group I was kept on NPO for 1 week. Groups II, III, and IV were fed through a nasogastric (NG) tube from the second to the sixth postoperative day (POD) with low residual (Osmolite-HN), high-fat (Pulmocare), and glutamine-containing (AlitraQ) enteral formulas, respectively. Groups V, VI, and VII were fed through a nasojejunal (NJ) tube from the second to the sixth POD with Osmolite-HN, Pulmocare, and AlitraQ, respectively. Feeding started at 500 kcal/500 cm³/d. If the patient tolerated the formula well, feeding increased to 1500 kcal/1500 cm³/d the following day. Intragastric pH was measured preoperatively and then twice daily until the sixth POD. Results: Poor tolerance occurred in 14 patients (23%) with NG tube feeding and 18 patients (30%) with NJ tube feeding. The pH value of intragastric juice increased significantly once NG feeding started (3.67±1.33 on the third POD; 4.28±1.26 on the sixth POD). However, the pH value remained low after NJ feeding was started (2.09±1.46 on the third POD; 2.14±1.49 on the sixth POD). Conclusions: This series suggests that (1) the majority of patients can tolerate early feeding well following resection of colorectal cancer, and NJ feeding is not necessarily better tolerated than NG feeding; (2) early NG, but not the NJ feeding, can significantly elevate the intragastric pH value in patients who underwent resection of colorectal cancer. NG may be more effective than NJ feeding in preventing stress-induced gastropathy by elevating the pH value of intragastric juice.

The History of Nonsurgical Enteral Tube Feeding Access

G Cresci and J Mellinger

Abstract

Specialized nutrition support, particularly enteral feeding, has been used for centuries. Technologic advancements have affected the provision of enteral feeding. Feeding solutions and devices, as well as the techniques to place the feeding devices, have evolved. This article reviews the history of bedside placement methods for short-term enteral access devices.
Enhancing Patient Safety During Feeding-Tube Insertion: A Review of More Than 2000 Insertions

R Sorokin and J E Gottlieb

Abstract

Background: An intervention to reduce complications from insertion of small-bore nasogastric feeding tubes was performed. Methods: This was a Performance Improvement project with the Plan, Do, Study, Act (PDSA) format; interventions occurred in July 2003. Electronic searches of risk management and radiology databases identified feeding-tube malpositions and complications from January 1, 2001, through December 31, 2004. Chart abstraction and a pre- and postintervention comparison were performed. Interventions were adoption of a more compliant feeding tube, direct supervision of residents, technology-guided insertion, and implementation of explicit policies and procedures. Results: Of all small-bore nasogastric feeding-tube placements, 1.3%–2.4% resulted in 50 documented cases of feeding-tube malpositions during 4 years. Over half of the 50 patients were mechanically ventilated, and only 2 had a normal mental status. There were 13 complications (26% of malpositions), including 2 deaths, which were directly attributed to the feeding-tube malposition. Only 2 of the 13 complications and none of the misplacements had been recorded in the risk management database; most cases were identified from the search of radiology reports. In the 15-month postintervention period, no complications were identified. The control chart showed that after the intervention, there was a significant increase in the "number between" tube insertions without complications, confirming the effectiveness of the performance improvement (PI) project. Conclusions: Unassisted feeding tube insertion carries significant risk in vulnerable patients, which can be mitigated. Voluntary reporting appears inadequate to capture complications from feeding tube insertion.

Hospitalized Mechanically Ventilated Patients are at Higher Risk of Enteral Underfeeding than Non-Ventilated Patients


Abstract

Background & aims: Enteral nutrition (EN) is the preferred method of nutrition support in hospitalized patients but only 50–90% of the required calories are actually delivered. In order to identify where our nutrition support team (NST) should focus its activity, we prospectively evaluated the level of coverage of energy and protein needs during the first 5 days of EN in intensive care unit (ICU) and non-ICU patients and the relationship of energy and protein coverage with serum albumin, transthyretin, insulin-like growth factor-1 (IGF-1) and C-reactive protein (CRP). Methods: Subjects (n=183) who required nutrition support and received EN were prospectively recruited. Calorie prescription was 20 and 25, 25 and 30 kcal/kg BW for women and men ≥60 years and <60 years, respectively. Protein needs were estimated as 1.2 g protein/kg BW. Logistic regression analysis was used to estimate odds ratios (OR) for energy and protein delivery ≥66.6% and <66.6% and albumin, transthyretin, IGF-1 (low vs. normal) and CRP (high vs. normal) in ventilated vs. non-ventilated patients. Results: Significantly more mechanically ventilated than non-ventilated patients received <66.6% of energy (71% vs. 48%) and protein (96% vs. 65%). The ventilated patients were more likely to be energy (OR 2.1, CI 1.1–4.0) and protein (OR 15.7, CI 4.9–50.8) underfed than non-ventilated patients. There was a significant association on day 5 between low protein delivery and low albumin (OR 2.9, CI 1.3–6.5), low transthyretin (OR 3.0, CI 1.4–6.5), low IGF-1 (OR 2.8, CI 1.2–6.7) and high CRP (OR 3.5, CI 1.6–7.8). Conclusions: The energy and protein needs of hospitalized patients are not met during the first 5 days of EN. Ventilated patients are more likely to be energy and protein underfed than non-ventilated patients and to have low plasma protein level. These findings support our decision to intensify EN monitoring by our NST in ventilated patients to optimize their nutritional coverage.
Fecal Energy Losses in Enterally Fed Intensive Care Patients: An Explorative Study using Bomb Calorimetry

R J M Strack van Schijndel, N J Wierdsma, E M B van Heijningen, P J M Wejs, S D W de Groot and A R J Girbes

Abstract

Background & Aims: Early enteral nutrition and tailored supply of nutrients have become standard in most of the intensive care units (ICU). So far little attention has been given to losses of energy in the stools. The purpose of this explorative study was to evaluate the energy losses of patients with loose stools, necessitating the use of a feces-collector device in a tertiary academic ICU. Methods: In a group of 13 fully enterally fed and mechanically ventilated patients with loose stools, the daily energy loss in feces was determined, using bomb calorimetry. Malabsorption was defined as an absorption capacity of 85% or less. Energy expenditure was determined with indirect calorimetry. Results: Six out of 13 (46%) patients fulfilled the criterion of malabsorption. The mean total energetic absorption capacity was 84.6 ± 13.3%. The mean capacity of absorption of fat was 89.7 ± 16.3%. The caloric value of energy loss had a mean of 301 ± 259 kcal/day. Fecal fat loss proved not to be a good indicator of total fecal energy loss. A total of 4/13 patients (31%) had a net negative energy balance of over 500 kcal/day. A daily feces production of 250 g or more was a good predictor of malabsorption. Energy loss could accurately be predicted by using a factor 4.87 for the combined energetic value of protein and carbohydrates, if dry weight and fecal fat content are known. Conclusions: In this clinical study on ICU patients with loose stools, malabsorption proved to be a frequently occurring and so far unrecognized problem, contributing strongly to negative energy balances in 1/3 of the patients.

Effects of Enteral Feeding with Eicosapentaenoic Acid, [Gamma]-Linolenic acid, and Antioxidants in Mechanically Ventilated Patients with Severe Sepsis and Septic Shock

A Pontes-Arruda, A M A Aragao and J D Albuquerque
Critical Care Medicine (2006) 34(9): 2325-2333

Abstract

Objectives: Enteral diets enriched with eicosapentaenoic acid (EPA), [gamma]-linolenic acid (GLA), and antioxidants have previously been shown to improve outcomes in patients with acute respiratory distress syndrome. Several studies using animal models of sepsis demonstrate that enteral nutrition enriched with omega-3 fatty acids reduces mortality rate. This study investigated whether an enteral diet enriched with EPA, GLA, and antioxidant vitamins can improve outcomes and reduce 28-day all-cause mortality in patients with severe sepsis or septic shock requiring mechanical ventilation. Design: Prospective, double-blind, placebo-controlled, randomized trial. Setting: Three different intensive care units of a tertiary hospital in Brazil. Patients: The study enrolled 165 patients. Interventions: Patients were randomized to be continuously tube-fed with either a diet enriched with EPA, GLA, and elevated antioxidants or an isonitrogenous and isocaloric control diet, delivered at a constant rate to achieve a minimum of 75% of basal energy expenditure x 1.3 during a minimum of 4 days. Measurements and Main Results: Patients were monitored for 28 days. Patients who were fed with the study diet experienced a significant reduction in mortality rate compared with patients fed with the control diet, the absolute mortality reduction amounting to 19.4% (p = .037). The group who received the study diet also experienced significant improvements in oxygenation status, more ventilator-free days (13.4 +/- 1.2 vs. 5.8 +/- 1.0, p < .001), more intensive care unit (ICU)-free days (10.8 +/- 1.1 vs. 4.6 +/- 0.9, p < .001), and a lesser development of new organ dysfunctions (p < .001). Conclusions: In patients with severe sepsis or septic shock and requiring mechanical ventilation and tolerating enteral nutrition, a diet enriched with EPA, GLA, and elevated antioxidants contributed to better ICU and hospital outcomes and was associated with lower mortality rates.
Lower Limb Fracture, Cognitive Impairment and Risk of Subsequent Malnutrition: a Prospective Evaluation of Dietary Energy and Protein Intake on an Orthopaedic Ward

M D Miller, E Bannerman, L A Daniels and M Crotty

Abstract

Objective: To report the dietary energy and protein intake of undernourished older adults (with and without cognitive impairment) admitted to hospital following a lower limb fracture and to determine whether dietary intakes met estimated requirements. Design: An observational study of a sequential sample. Setting: The orthopaedic ward of a South Australian metropolitan teaching hospital. Subjects: Sixty-eight patients aged ≥70 years screened as undernourished and admitted to hospital following lower limb fracture (50% cognitively impaired) provided 3 to 5 days of dietary data. Major outcome methods: Dietary energy and protein intake. Methods: Dietary assessment using plate waste methodology and snack record charts commenced within 6 days postinjury and continued for up to five consecutive days or until discharge. Estimated resting energy requirements were calculated and adjusted for activity equivalent to bed rest and physiological stress. Protein requirements were calculated as 1 g/kg/day. Cognition was assessed using the Short Portable Mental Status Questionnaire. Results: Cognitively impaired participants and those without cognitive impairment consumed, mean (95% CI) respectively, 3661 kJ/day (3201, 4121) versus 4208 kJ/day (3798, 4619) and 38g (33, 44) versus 47g (41, 52) protein/day. Cognitively impaired participants consumed mean (95% CI) 48% (43, 53) of estimated total energy expenditure and 78% (69, 87) of estimated protein requirements. Conclusions: Orthopaedic fracture patients at greatest nutritional risk, including those with cognitive impairment, do not achieve estimated energy or protein requirements from diet alone. Effective methods of achieving requirements in this vulnerable group are needed before improvements in outcomes will be observed.

Energy Expenditure in Underweight Chronic Obstructive Pulmonary Disease Patients Before and During a Physiotherapy Programme

F Slinde, K Kvarnhult, A M Grönberg, A Nordenson, S Larsson and L Hulthén

Abstract

Objective: To investigate how total daily energy expenditure (TEE) changes when underweight patients with chronic obstructive pulmonary disease (COPD) enters a physiotherapy programme. Design: Prospective intervention study. Setting: Sahlgrenska University Hospital, Göteborg, Sweden. Subjects: Fifteen patients with severe COPD and BMI<21 kg/m² were recruited consecutively at the outpatient COPD unit at the Department of Respiratory Medicine. Fourteen patients completed the whole study. Intervention: TEE was assessed by the doubly labelled water method in a 2-week control period and during 2 weeks of physiotherapy. Energy intake was assessed using 7-day dietary record during control and physiotherapy period. Results: Mean TEE during physiotherapy period was 500 kJ (6%) lower than during control period but the difference was not statistically significant. Ten of the 14 patients had lower and four had higher TEE. Mean energy intake during the physiotherapy period did not change from the control period (7700 vs 7600 kJ/day). Conclusions: Since underweight patients with COPD may show variable TEE during physiotherapy compared to a control period, an assessment of individual energy requirements is recommended.
Energy Expenditure and Protein Requirements After Traumatic Injury

D Frankenfield

Abstract
Traumatic injury induces hypermetabolism. The degree of hypermetabolism can be variable, depending on the type of injury, the degree of inflammation, body composition, age, and treatment regimens. To estimate metabolic rate in some types of injury, predictive equations have been published. Some of these equations have been tested in validation studies. For other types of injury, equations do not exist. Some expert panels have recommended measuring in lieu of estimating metabolic rate, though studies have not been performed to determine whether clinical outcome is affected by the method used to determine energy requirements. Traumatically injured patients are usually catabolic, but protein needs after traumatic injury continue to be debated. Some suggest that 1.5 g protein per kg body weight is adequate and that any additional protein is simply oxidized, adding to the nitrogen load to be excreted. Alternately, protein intake >2.0 g/kg body weight increases the absolute rate of body protein synthesis, and achievement of nitrogen balance has been associated with survival. Thus, provision of high-protein feeding to achieve nitrogen balance might be worthwhile, even if that balance is achieved at the cost of additional nitrogen production.

The Effects of Undernutrition and Refeeding on Metabolism and Digestive Function

T A Winter

Abstract
Purpose of review: An intimate interrelationship exists between nutritional status and gut function. This review focuses on the consequences of a poor nutritional state on metabolism and digestive function, and evaluates the effects of refeeding. Recent findings: Severe undernutrition has been associated with increased fat and protein catabolism, reflected by a decreased respiratory quotient. Resting energy expenditure assessed in relationship to body weight was increased, probably as a consequence of changes in body composition. Protein synthesis, expressed per kg body weight, was decreased in undernourished patients with coexistent disease, but not in anorexia nervosa patients, indicating the detrimental effects of disease states. Severe undernutrition is associated with malabsorption, which improves following refeeding. Despite a high prevalence of villous atrophy in the duodenal mucosa in undernourished patients, mucosal protein fractional synthesis rates appeared normal. Refeeding resulted in a potent trophic response, and normalization of the mucosal morphology. Gastric and pancreatic secretion was significantly impaired by the undernourished state, with significant improvement following refeeding. Summary: Undernutrition is associated with impairment of digestive function, which is likely to further aggravate the nutritional state. Refeeding corrects this dysfunction, and results in disruption of this vicious circle.
Role of Intestinal Function in Cachexia

M Pirlich, K Norman, H Lochs and J Bauditz


Abstract

Purpose of review: Cachexia is a prominent feature in many chronic diseases, but its pathogenesis is still not fully understood. This article reviews recent research into the role of the gut barrier in the pathogenesis of inflammation and cachexia with special emphasis on two potentially catabolic diseases: liver cirrhosis and chronic heart failure.

Recent findings: There is increasing evidence that catabolic diseases such as liver cirrhosis and chronic heart failure are associated with increased gut permeability, endotoxemia and enhanced expression of proinflammatory cytokines. In liver cirrhosis normalization of portal hypertension by insertion of a transjugular intrahepatic portosystemic stent shunt obviously causes improvement not only of gut barrier function, but also of nutritional status. Summary: Although its pathogenesis is not yet completely understood, proinflammatory cytokines have been implicated in the onset and progression of cachexia. Recent data support the hypothesis that impaired gut barrier function and increased permeability further translocation of endotoxins. Increased endotoxemia might be a potent trigger of systemic inflammatory response which is involved in the pathogenesis of the cachexia syndrome. Thus, it is tempting to speculate that therapeutic strategies for the improvement of gut barrier function will concomitantly improve nutritional status.

Malabsorption is a Major Contributor to Underweight in Crohn’s Disease Patients in Remission

N Vaisman, I Dotan, A Halack and E Niv

Nutrition (2006) 22(9): 855-859

Abstract

Objective: Undernutrition has been reported in 65–75% of patients with Crohn’s disease. The present study aimed at identifying the relative contribution of malnutrition-causing factors in patients with Crohn’s disease in remission. Methods: Sixteen patients with Crohn’s disease (age 19–57 y) in remission (Crohn’s Activity Disease Index < 150) were included in the study. Their weight was stable for >3 mo and they were off steroids. They all completed 3-d food records and concomitantly collected stools. Self-reported food records were analyzed and energy content in stools was determined by a direct bomb calorimeter. Resting energy expenditure (REE) was studied by indirect calorimetry and body composition by dual-energy X-ray absorptiometry. The study cohort was divided into two groups, with a body mass index (BMI) equal to 18.5 kg/m2 serving as a cutoff point. Results: Subjects with lower BMIs tended to have less lean body mass (P = 0.006), less bone mineral density (P = 0.006), and lower REE (P = 0.003). No correlation was found between BMI and energy intake but the percentage of malabsorption was negatively correlated with BMI (P = 0.07). When dividing the study based on a BMI of 18.5 kg/m2, no difference was found in caloric intake or REE between groups but subjects with lower BMIs had significant prominent malabsorption compared with the others (21.1 ± 9.8% versus 11.7 ± 3.5%, P = 0.015). Conclusion: In the presence of similar energy intake, REE does not seem to contribute to lower BMI, although nutrient malabsorption is higher in malnourished patients with Crohn’s disease in remission. We suggest that malabsorption be evaluated in patients with Crohn’s disease who fail to gain weight during disease remission to establish their extra caloric requirements.
Glutamine: Role in Gut Protection in Critical Illness

P E Wischmeyer


Abstract

Purpose of review: Recent literature has focused on the role of the gut and increased gut permeability as a driver of systemic inflammation in critical illness. Thus, the therapeutic potential for an agent to prevent gut barrier compromise and attenuate gut-derived inflammatory response is significant. Recent findings: In laboratory and clinical settings, glutamine can attenuate gut permeability following critical illness and injury. Further, recent literature has revealed other mechanisms by which glutamine may attenuate the systemic inflammatory response driven by the gut. These findings reveal that glutamine may act at multiple levels to attenuate gut injury and potential subsequent gut-derived systemic inflammatory response. These mechanisms focus around glutamine’s ability to induce the cellular protective stress response in the gut. This leads to enhanced protection of the gut epithelial barrier and attenuation of generation of inflammatory mediators. Summary: These mechanistic findings, combined with a limited amount of clinical data showing benefit on gut permeability in illness and injury, indicate more formal studies need to be carried out looking the role of glutamine in gut protection and as an antiinflammatory in critical illness.

The Effect of Glutamine-Enriched Enteral Nutrition on Intestinal Permeability in Very-Low-Birth-Weight Infants: A Randomized Controlled Trial

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Abstract

Background: Very-low-birth-weight (VLBW) infants are susceptible to glutamine depletion. Glutamine depletion has negative effects on intestinal integrity. The lower infection rate in VLBW infants receiving glutamine-enriched enteral nutrition may originate from improved intestinal integrity, as reflected by decreased intestinal permeability. The aim of our study was to investigate whether glutamine-enriched enteral nutrition in VLBW infants enhances the normal decrease in intestinal permeability, as measured by the sugar absorption test (SAT). Methods: In a double-blind, randomized, placebo-controlled trial, VLBW infants (gestational age <32 weeks or birth weight <1500 g) received enteral glutamine supplementation (0.3 g/kg/d) or an isonitrogenous placebo supplementation (alanine) between days 3 and 30 of life. Intestinal permeability, determined from the urinary lactulose/mannitol (L/M) ratio after an oral dose of lactulose and mannitol, was assessed at 4 time points: before the start of the study, and at days 7, 14, and 30 of life. Results: At least 2 SATs were performed in 45/52 (86%) and 45/50 (90%) infants in the glutamine-supplemented and control groups, respectively. Baseline patient and nutrition characteristics were not different between the groups. There was no effect of glutamine-enriched enteral nutrition on the decrease of the L/M ratio between the start and end of the study (p = .78). In both treatment groups, median urinary lactulose concentrations decreased (p < .001), whereas median urinary mannitol concentrations increased (p = .003). Conclusions: Glutamine-enriched enteral nutrition does not enhance the postnatal decrease in intestinal permeability in VLBW infants. Any beneficial effect of glutamine may involve other aspects of intestinal integrity; for example, modulation of the intestinal inflammatory response.
Early Oral Nutrition After Major Upper Gastrointestinal Surgery: Why Not?

K Lassen and A Revhaug

Abstract

Purpose of review: To examine the available documentation addressing the introduction of early food after major upper gastrointestinal surgery.

Recent findings: No high-quality trials, recent or old, have addressed this topic. A few attempts have been identified. Information is extracted from papers discussing other topics of postoperative care in this field. Generally, nasogastric tubes and nil-by-mouth prevail in the early postoperative period.

Summary: The reluctance to allow early food at will is not evidence based, but neither is the safety of an alternative regimen. Early food at will should probably be allowed after hepatic resections, gastric resections, and total gastrectomies and maybe also after pancreaticoduodenectomies. Resections of the esophagus remain the most challenging issue. The need is urgent for high-powered and high-quality randomized controlled clinical trials.

Physiological Response of the Human Pancreas to Enteral and Parenteral Feeding

S J D O'Keefe

Abstract

Purpose of Review: Normal digestive physiology is a highly orchestrated process, integrating the mechanical breakdown of food, the secretion of digestive juices, the control of motility, and the efficient absorption of nutrients. As enteral and parenteral feeding techniques bypass many of these control mechanisms, nutritional utilization can be expected to be disturbed. This review examines recent publications that have investigated this question in clinical practice.

Recent Findings: Studies in healthy volunteers have shown that all forms of oral and enteral tube feeds commonly used, including proximal jejunal elemental diets, stimulate pancreatic secretion. Avoidance of the cephalic phase with duodenal feeding does not reduce the secretory response. 'Pancreatic rest' can, however, be achieved if feeding is delivered 40-60 cm past the ligament of Treitz by activating the ileal brake, or if it is given intravenously by avoiding intestinal cholecystokinin stimulation and the cholinergic reflex. These forms of feeding, however, can cause complications as they will result in malabsorption unless elemental formulae are used, and hyperglycemia as the metabolic utilization of intravenous nutrients is impaired.

Summary: An understanding of normal pancreatic physiology and how interventional feeding techniques affect it will help prevent complications and improve outcome in hospitalized patients.
Nutrition Support in Adult Trauma Patients

S R Todd, R A Kozar and F A Moore

Abstract
Nutrition supplementation is paramount to the care of severely injured patients. Despite its widespread use in trauma patients, many areas of clinical practice remain controversial. The purpose of this paper is to critically review the literature studying the use of enteral vs parenteral nutrition (PN) and to provide the rationale for early enteral nutrition. Additional controversies confronting clinicians are reviewed, including the use of immune-enhancing agents and the optimal site for enteral nutrition delivery (gastric vs small intestinal). Evidence-based recommendations for clinical practice are presented when available.

Modular Protein Supplements and Their Application to Long-Term Care

V H Castellanos, M D Litchford and W W Campbell

Abstract
Modular protein supplements are added to either the diet or enteral formula to increase the protein or amino acid intakes of people who are nutritionally compromised. Protein supplements are aggressively marketed to long-term care clinicians because protein energy malnutrition and wounds are a common problem in this care setting. It can be challenging for clinicians to distinguish one product from another and to determine the best product for a specific application or nutrition care goal. Modular protein products can be sorted into 4 categories: (1) protein concentrates derived from a complete protein such as milk, soy, or eggs; (2) protein concentrates derived from collagen, either alone or in combination with a complete protein; (3) doses of 1 or more dispensable (nonessential) amino acids; and (4) hybrids of the complete or collagen-based proteins and amino acid dose. Modular protein supplements are generally provided either as a substrate for protein synthesis or as a source of 1 or more amino acids that may be conditionally indispensable (conditionally essential) under certain disease conditions. This review provides guidelines for the use of modular protein supplements according to their intended physiologic function and the assessment and nutrition care goals of the long-term care resident.
Reference List

Useful References on Nutritional Support

  *This article explores the evidence on the relatively controversial issue in contemporary nursing practice of fasting pre-operatively. The article aims to allow nurses to reflect upon their own practice in this area.*

  *This article is a review that looks at recent articles and concludes that studies have shown that probiotics play a role in decreasing postoperative complications in patients undergoing major gastrointestinal operations.*

  *This article discusses failure to thrive in children with congenital heart disease and the influences it has on the metabolic response to injury and outcome after corrective surgery.*

  *This article’s objective is to characterize energy balance and the reporting accuracy of dietary intake in children with Cystic Fibrosis by evaluating the relations between energy intake (EI), energy expenditure (EE), faecal energy loss, nutritional status, and growth.*

  *This article investigates the nutritional status of older people in residential care homes the objective is to determine the anthropometric measures and dietary intakes of older people in this setting as a basis for future intervention studies.*

  *This article aims to investigate longitudinal body composition changes in a population of elderly people in good apparent health.*

  *This article looks at unwarranted underestimation and overestimation of personal weight status and the fact that it may prevent weight maintenance behaviour.*

  *This article focuses on the needs of patients with dementia. It emphasises the importance of good nutritional intake for patients with dementia in hospital care.*
Reference List

  This article reports on the new NPSA audit which aims to find out how many hospitals halt non-urgent ward and drug rounds at mealtimes so that nursing staff can concentrate on feeding patients.

  This article looks at undernutrition as a growing problem which requires vigilance of health care professionals. Anna Denny looks at the new NICE nutrition and support guideline and its implementation in the care home setting.

  This opinion article looks at the challenges faced in wards by nurses to assess and monitor patients and what must be done to improve the situation.

  This report details an online survey about the use and format of the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) Standards and Guidelines documents.

  This article looks at the launch of the NICE guideline and an independent review of the statistics together with hints and advice on implementation. It concludes that the guidelines empower dietitians and that it is a positive step in managing malnutrition.

  This article summarises several major advances in tube feeding formulas, starting with blended formulas to commercially available intact-nutrient formulas and culminating in the introduction of the concept of immunonutrition.

  The aim of this article is to determine whether early postoperative immune modulating jejunostomy feeding result in reduced infective complications in patients undergoing resectional surgery for upper gastrointestinal cancer.

  This paper evaluates the adherence to nutritional guidelines in low birth weight infants and compares the pre and post-guideline outcomes.

  This pivotal paper discusses the research and practice around early enteral nutrition in intensive care after abdominal trauma.